



7th Annual Conference

# TRANSMISSION LINES, TOWERS AND SUBSTATIONS

October 21-22, 2019, The Leela Ambience, Gurugram

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# TRANSMISSION LINES, TOWERS AND SUBSTATIONS

## Mission

- The Indian power grid is undergoing a transformational change. Large-scale integration of renewable energy and the need to cater to new demand loads and provide reliable electricity are motivating transmission utilities to redesign their grid strategies. The coming years will require utilities to focus more on grid optimisation, reliability, resilience, and flexibility in order to improve access to cheaper power and enable the integration of renewable energy.
- To prevent upcoming generation capacity from getting stranded and to ensure timely power supply to intended consumers, the transmission grid must expand in tandem with planned generation. Innovations in the design and construction of lines, towers and substations are being undertaken for faster execution.
- Issues pertaining to RoW, high cost of land, forest conservation and visual impact are being addressed through the use of new tower designs (narrow base, multi-circuit, monopoles) and advanced conductor technologies (HTLS and HPCs). Utilities are opting for reconductoring and uprating of lines to enhance the capacity of the existing transmission corridors. In densely populated and urban areas where land availability is an issue, underground cables (XLPE cables) are being preferred.
- Transformer and switchgear technologies have evolved over the years. Energy-efficient and environment-friendly transformers are being deployed to reduce the environmental footprint. GIS and hybrid switchgear are being preferred over the regular air- or oil-insulated switchgear due to advantages such as small size, high safety index, and lower maintenance. Smart transformers and switchgear equipped with multiple IEDs or control systems are now entering the market. A breakthrough in switchgear technology is the use of a new eco-friendly insulation mixture to address the environmental concerns of SF6 in switchgear.
- Utilities are working towards improving power quality and enhancing grid optimisation, especially as more renewable energy comes online. Solutions such as FACTS and capacitor banks are being deployed to ensure grid stability and reliability.
- Technologies such as remote control, automation systems and smart applications allow for open and real-time operation of the grid system. Since a robust and reliable communication system forms the foundation of such an automated grid system, utilities are deploying technologies such as optic fibre, VSAT and IEC 104 protocol on digital PLCC for data transfer.
- Digitalisation is another fast emerging trend, driven by the need to introduce efficiency in grid operations, and operations and maintenance. With benefits such as increased flexibility and availability, reduced cost, and lower risk and environmental impact, an uptake in the deployment of digital substations is seen across utilities.
- With advancements in transmission equipment technology, design and construction methods have also evolved. Technologies like helicopter stringing, LiDAR, sky crane and UAVs or drones are being used in the planning, designing and construction of overhead transmission networks.
- Utilities are undertaking active asset management and maintenance to maximise asset life, prevent outages, and optimise maintenance effectiveness and efficiency. The digital and robotic solutions being deployed for this include geospatial data for asset management, GIS-based tracking of assets, remote monitoring and control equipment, and smart field force management.
- **The mission of the conference is to highlight the most promising technologies and viable solutions to deliver a reliable and secure transmission grid infrastructure. It will present the experience with these technologies so far, and the expected trends. It will also showcase successful projects and best practices.**

## Previous Participants

*Some of the participants from our previous transmission conferences were: A.P. Transco, A2Z, ABB India Limited, ACB, Accenture, ACME, Adani, Adani transmission, Adhunik Power, Aditya Birla Insulators, AES, AIC Steel, Airbus Group, Alstom T&D, Altec Industries, Amara Raja, AMAT, Angeliq International Limited, Apar Industries, APTRANSCO, Arcturus Business Solutions LLP, Arresto Solutions, Assam Electricity Grid Corporation, Associated Power Structures, AVEVA Information Technology, Aveva Information Technology India Pvt Ltd, Bain & Company, Bajaj Electricals Ltd, Barclays, Bechtel, Bekaert, Bentley Systems, BGR Energy, BHEL, Bihar State Power Transmission Co.Ltd, BNC Power Projects, Bothe Windfarm Development, Brugg Cables, Burns McDonnell, Cabcon, Cargil, CESC, Chloride Power Systems, CLP, CRISIL, Crompton Greaves, CTC Global, Customized Energy Solutions, Damodar Valley Corp, Delhi Transco, Dhreshwar GEB-400 KV Jetpur, DNV-GL, DSP Merrill Lynch, Easun -MR Tap Changers, EDAC Engineering, Electrotherm, Elite Powertech, EMC, Entegra, ERA T&D, ERDA, Essar Power, Exide Industries, FLIR, Focal Energy, France Elevateur, Galaxy Transmission, Gammon, Garware -Wall Ropes, GE, GETCO, GIZ, Godrej & Boyce, Good Luck Steel, Gupta Power, Himalayan Heli Services, Hind Aluminium, HPERC, HVPNL, Hyosung T&D, iEngineering, IFC, IL&FS Energy Development, Inabensa, India Power, Indian Railways, Indo-German Energy Forum, International Energy Resources, Isolux Corsan, IVRCL TL, Jagdamba International, Jaigad Power Transco, Jindal Steel & Power, J-Power Systems, JSK Industries, JSW Power Trading, Jyoti Structures, Kalpataru Power Transmission, Karamtara, Karnataka Power Transmission, KEC International, KEI Industries, Kloeckner DESMA Machinery, KSEB, L&T (Kudgi Transmission), L&T Infra Finance, L&T Sargent & Lundy, Lara Global, M&I Materials, MacLean Power, Maha Transco, Maharashtra SLDC, MAN Structural, MAP Power LLP, Maschinenfabrik Reinhausen GmbH, Mitsui & Co. India Pvt Ltd, MMC UAV, Modern Insulators, MP Power Transmission, MTEK PRO, Nandan Steels & Power, NLC, NTPC, Odisha Power Transmission Corporation Limited, Orange Renewable Power, Parbati Koldam Transmission, PFC, POSOCO, Power Grid, Power Transmission Corporation of Uttarakhand Ltd, Powerlinks, Pradman Engineering Services, Primtech, PSTCL, PTC, Punj Lloyd, Purulia & Kharagpur Transmission, PwC, R.S. Infraprojects, Ramboll, Ramelex, REC Transmission, Reliance Infrastructure, Rites, RRPNL, SAIL, SBI, SBI Capital Markets, Septelt Advisory Services, SGD La Granja Vidrieria, Shenzhen Micromulticopter Aero Technology, Shyam Indus Power, Sicame, Siddhartha Engineering, Siemens, SJVNL, Skipper, SMEC, State Grid Corporation of China, Sterling and Wilson, Sterlite Power Grid, Sumitomo, Supreme & Co., Suzlon Energy, Tag Corporation, Tamil Nadu Transmission Corporation, Tata Power, Tata Projects, Taurus Powertronics, TBEA, TESMEC, Tokyo Rope Mfg., Torrent Power, Transrail Lighting, Trimble Solutions India, TSE International, UbiFrance, UPPTCL, Utarksh Tubes & Pipes, Valmont Structures, Virtuous Energy, WBSETCL, Wipro, Yes Bank, ZTT Cable, etc.*

## AGENDA/STRUCTURE

### KEY TRENDS AND OUTLOOK

- ❖ What are the key trends in technology adoption by the power transmission sector?
- ❖ What are the new and emerging requirements?
- ❖ What are the key issues and challenges?

### POWERGRID PERSPECTIVE

- ❖ What are the plans for the development of the transmission network?
- ❖ What are the issues faced by utilities in project execution?
- ❖ What technology options could address these issues?

### OPERATOR/DEVELOPER PERSPECTIVE

- ❖ What has been the project execution experience of operators and developers?
- ❖ What are the issues and challenges faced?
- ❖ What are some of the new designs and technologies being introduced in the market?

### EPC PERSPECTIVE

- ❖ What has been the experience of EPC firms in executing projects?
- ❖ What are the key issues and challenges faced in project execution?
- ❖ What are some of the new designs, technologies, solutions and practices being followed during project execution?

### DESIGN, CONSTRUCTION AND STRINGING OF TRANSMISSION LINES

- ❖ What are the developments in the design of transmission lines?
- ❖ What are the key considerations and challenges in the construction of new transmission lines?
- ❖ What are the new techniques being used for transmission line stringing?

### TOWERS AND FOUNDATIONS

- ❖ What tower designs and structures are being deployed to optimise RoW requirements?
- ❖ What are some of the developments in foundations to reduce the environmental impact?
- ❖ What are the challenges and considerations in designing towers and structures?

### SUBSTATION AUTOMATION AND DIGITALISATION

- ❖ What are the substation automation and digitalisation solutions being offered by the industry?
- ❖ How are utilities expected to benefit from these technologies and solutions?
- ❖ What has been the utility experience in this regard?

### ADVANCED CONDUCTOR TECHNOLOGIES

- ❖ What technologies are being adopted to improve conductor performance?
- ❖ What are the trends in the uptake of HTLS, superconductors, XLPE cables and GILs by utilities?
- ❖ What are the issues and challenges?

### TRANSFORMERS AND SWITCHGEAR TECHNOLOGIES

- ❖ What are the latest transformer and switchgear technologies? What are the green and smart solutions?
- ❖ What are the solutions for enhancing the health of substation assets?
- ❖ What are the utilities' plans for the adoption of these technologies?

### IMPROVING POWER QUALITY

- ❖ What are some of the technological solutions for improving grid optimisation?
- ❖ How are utilities expected to benefit from these solutions?
- ❖ What has been the utilities' recent experience? What are the utilities' initiatives in this regard?

### ADVANCES IN COMMUNICATION INFRASTRUCTURE

- ❖ What are the new solutions available for creating a communications infrastructure for the grid?
- ❖ What are the plans of transmission utilities in this regard?
- ❖ What are the issues and challenges?

### RECONDUCTING AND UPRATING OF LINES

- ❖ What are some of the solutions for uprating and reconducting the existing lines?
- ❖ What are the economic and technical criteria for selecting optimal conductors in this regard?
- ❖ What are the issues and challenges?

### GRID PREPAREDNESS FOR EXTREME WEATHER EVENTS

- ❖ How are utilities preparing to protect their assets against extreme events?
- ❖ What are some of the best practices for grid protection during extreme weather?
- ❖ What are the solutions available for enhancing grid preparedness for such events?

### AERIAL TECHNOLOGIES

- ❖ What are some of the applications of aerial technologies in the design, construction and O&M of transmission assets?
- ❖ What is the uptake of aerial technologies by utilities?
- ❖ What are the issues and challenges?

### ASSET MANAGEMENT STRATEGIES AND SOLUTIONS

- ❖ How have asset management strategies evolved over the past few years?
- ❖ What are the new technologies and analytics solutions for increasing asset life and reliability?
- ❖ What methods are utilities deploying for monitoring transmission assets?

### PROJECT SHOWCASE

- ❖ What are the key features of the project (in terms of components/the technology used, the design approach, etc.)?
- ❖ What were the issues and challenges faced?
- ❖ What lessons can be learnt?

### Target Audience

The conference is targeted at:

- Transmission companies
- Interstate transmission operators
- Technology providers
- Transmission structure manufacturers (towers and substations)
- Conductor manufacturers
- Transmission line manufacturers
- State electricity boards
- Private developers
- Foundation and piling companies
- Private utilities
- Design and consulting organisations
- Steel companies, etc.



## 7th Annual Conference on

# TRANSMISSION LINES, TOWERS AND SUBSTATIONS

October 21-22, 2019, The Leela Ambience, Gurugram

### Registration Form

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Delegates	20 per cent discount (before September 26, 2019)		Fee post September 26, 2019			
	Total INR (incl. tax)	Total USD	INR	GST @ 18%	Total INR	Total USD
One delegate	23,600	393	25,000	4,500	29,500	492
Two delegates	37,760	629	40,000	7,200	47,200	787
Three delegates	51,920	865	55,000	9,900	64,900	1,082
Four delegates	66,080	1,101	70,000	12,600	82,600	1,377

- There is a 20 per cent "early bird" discount for those registering before September 26, 2019.
- There is a special low fee of Rs 6,000 per participant for the state electricity boards and their successor units (state-owned transcos), regulatory authorities and research/academic institutions.
- Registration will be confirmed on receipt of the payment.
- To register online, please log on to <http://indiainfrastructure.com/conf.html>

#### Payment Policy:

- The conference is a non-residential programme.
- Full payment must be received prior to the conference.
- Conference fee includes lunch, tea/coffee and conference materials.
- Conference fees cannot be substituted for any other product or service being extended by India Infrastructure Publishing Pvt. Ltd.

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## Organisers

The conference is organised by Power Line and Global Transmission. Power Line is a leading provider of information on the power sector. Its parent company, India Infrastructure Publishing, provides information on infrastructure sectors through magazines, newsletters, reports and conferences. It publishes a range of magazines including *Renewable Watch* and *Smart Utilities*.

Global Transmission is a provider of information and analysis on the global electricity transmission industry. It organises conferences on crucial issues and topical themes relevant to the transmission industry. It also publishes a series of reports including *Global Transmission Substation Market and Upcoming Projects Report*, *Global Electricity TSO Profiles and Benchmarking Report*, *Global High Voltage Transmission Line Projects Database and Report*, *Global Electricity Transmission Equipment Market Report* and *Global Transmission Investment Report*.